

subjecting a starting material comprising high-esterified pectin to a first treatment cycle comprising a step of extracting the starting material with an aqueous medium at an acidic pH under conditions where only a part of the pectin content is extracted,

separating a pectin extract from the treated starting material and recovering the pectin from the pectin extract to obtain the first pectin fraction,

followed by at least one further treatment cycle whereby the treated starting material extracted in a preceding treatment cycle is extracted with an aqueous extraction medium under conditions where at least a part of the pectin content is extracted from the treated starting material extracted in a preceding treatment cycle and recovering the pectin from an at least one second pectin extract to obtain the at least one second pectin fraction, the pH of the aqueous extraction medium in the at least one further treatment cycle being lower than in the immediately preceding treatment cycle, said at least one second pectin fraction being separate from said first pectin fraction, said process producing selected pectin fractions having successively increasing setting times.

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41. A selected pectin fraction according to claim 40 wherein the starting material comprising high-esterified pectin is a pectin-containing material which has been subjected to a pre-treatment.

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42. A selected pectin fraction according to claim 40 wherein the pH of the aqueous extraction medium in each treatment cycle is in the range of 1 to 4.

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43. A selected pectin fraction according to claim 40 wherein the starting material comprising high-esterified pectin is derived from a native vegetable material in a fresh or dried state.

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44. A selected pectin fraction according to claim 40 wherein the starting material comprising high-esterified pectin is a solid extraction residue from a preceding treatment cycle.

6 45. A selected pectin fraction according to claim 40 wherein the extraction in each treatment cycle is carried out at a temperature in the range of from 40°C to 100°C for a period of time of from 1 to 20 hours.

1 46. A selected pectin fraction according to claim 40 wherein the starting material comprising high esterified pectin or the treated starting material extracted in a preceding treatment cycle is present in each respective treatment cycle at a dry matter content in the range of from 1% to 5% by weight, based on the total amount of the starting material comprising high esterified pectin or the treated starting material extracted in a preceding treatment cycle and the aqueous extraction medium.

8 47. A selected pectin fraction according to claim 40 wherein the aqueous extraction medium in each treatment cycle comprises an added water soluble salt selected from the group consisting of calcium, aluminum and a mixture of calcium and aluminum in an amount which corresponds to a metal ion concentration in the range of from 10 mmol to 40 mmol per litre of the aqueous extraction medium.

9 48. A selected pectin fraction according to claim 40 wherein the pectin is recovered from the pectin extract of any of the treatment cycles by precipitation with a water-miscible organic solvent in which the pectin is substantially insoluble, separating the precipitated pectin from the liquid, and drying the separated pectin.

10 49. A selected pectin fraction according to claim 40 wherein the pectin is recovered from the pectin extract of any of the treatment cycles by adjusting the pH of the pectin extract to a level in the range of 2 to 2.5, adding a strongly acidic cation exchange resin in a salt form to raise the pH to a level in the range of 2.5 to 3.5, stirring the mixture at ambient temperature for 4 to 8 hours, separating the liquid from the ion exchange resin, precipitating the pectin by addition of a water-miscible organic solvent, separating the precipitated pectin from the liquid, and drying the separated pectin.

11 50. A selected pectin fraction according to claim 41 wherein the pre-treatment comprises heating a suspension of the starting material comprising high-esterified pectin at a temperature of from 60°C to 80°C in a substantially homogeneous solvent mixture.

comprising water and at least one water-miscible organic solvent in which the pectin is substantially insoluble, to which an acid is added to maintain a fixed pH of the suspension within the range of from 1 to 3 during the pre-treatment, and separating the pre-treated pectin-containing starting material.

12-8-51. A selected pectin fraction according to claim ~~50~~ wherein the weight ratio between the solvent and the water in the pre-treatment mixture is from 40:60 to 80:20, the amount of the water being the sum of added water and water present in the starting material comprising high-esterified pectin prior to the pre-treatment.

13 ~~14~~ 52. A selected pectin fraction according to claim ~~50~~ 51 wherein the starting material comprising high-esterified pectin is pre-treated for a period of from 2 to 6 hours.

~~14~~¹⁵ 53. A selected pectin fraction according to claim ~~50~~¹¹ wherein the pre-treated pectin-containing starting material is subjected to at least one washing step.

15 14 54. A selected pectin fraction according to claim 50 wherein the pre-treated pectin-containing starting material is dried to obtain a dry matter content in the material of at least 80% by weight. 11 12 15

55. A selected pectin fraction according to claim 54 wherein the pre-treated pectin-containing starting material is dried at a temperature in the range of from ambient temperature to 100°C for a period of up to 36 hours.

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56) A pectin fraction having a degree of esterification (DE) which is at least 50% and a setting time which is in the range of 0 to 100 sec, 101 to 200 sec, 201 to 300 sec or in excess of 300 sec.

~~18~~ ~~19~~ ~~20~~. A pectin fraction having a degree of esterification of 70% or less and a degree of amidation which is in the range of 0 - 25.

19 ~~20~~ 58. A pectin fraction of claim ~~18~~ ¹⁹ which has a degree of amidation in the range of 5 to 25.

- 20 ~~41~~
59. A pectin fraction of claim ~~57~~ which has a DE of less than 60%.
- 21 ~~59~~
60. A pectin fraction having a degree of amidation (DA) in the range of 0-25 and a degree of esterification (DE) of less than 50%.
- 22 ~~59~~
61. A pectin fraction of claim ~~60~~ which has a DE of 20 to 45%.
- 23 ~~59~~
62. A pectin fraction of claim ~~60~~ which has a DA of 5 to 25.
- 24 ~~59~~
63. A pectin fraction having a ratio between degree of esterification (DE) and degree of amidation (DA) of at least 0.75.
- 25 ~~59~~
64. A pectin fraction according to claim ~~63~~ having a ratio between degree of DE and degree of DA of 0.75 to 2.0.
- 26 ~~59~~
65. A pectin fraction of claim ~~56~~ which is a selected pectin fraction.
- 27 ~~59~~
66. A pectin fraction of claim ~~57~~ which is a selected pectin fraction.
- 28 ~~59~~
67. A pectin fraction of claim ~~60~~ which is a selected pectin fraction.
- 29 ~~59~~
68. A pectin fraction of claim ~~63~~ which is a selected pectin fraction.

REMARKS

I. NEW CLAIMS ARE SUPPORTED BY SPECIFICATION.

New claims 40 - 68 are supported by the specification, considered as a whole. For example, claim 40 is supported by claim 1, as allowed, in the prior application (Serial No. 09/091,733) and claim 17 of the prior application. Claims 41-55 are patterned after claims 2 - 16 allowed in the prior application. Claims 56 - 68 are directed to additional details of the invention, support therefor being found as follows: